DOCUMENT RESUME

ED 284 418 FL 016 671

AUTHOR Nord, James R.
TITLE The "Rear View Mirror" Approach.
PUB DATE Feb 87
NOTE 26p.
PUB TYPE Reports - Evaluative/Feasibility (142) -- Viewpoints (120) -- Journal Articles (080)
JOURNAL CIT Nagoya University of Commerce Bulletin; v32 p267-290 Feb 1987

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Communication (Thought Transfer); Educational Improvement; *Educational Technology; Equipment Utilization; Futures (of Society); *Interactive Video; *Linguistic Theory; Media Adaptation; *Neurological Organization; Second Language Instruction; *Teaching Methods; Technological Advancement

ABSTRACT

The new interactive videodisk systems with augmented audio capabilities have great potential for improving the teaching of foreign languages. At present that potential is unfulfilled because the profession is following a "rear view mirror" approach to media use: first, to fixate current practice; second, to distribute it broadly; and last, to manipulate the medium's distinctive characteristics in new and unusual ways to effect a higher level of communication. At present these systems are confined to the first two levels of use. As we become increasingly aware that (1) language is an interactive process of form and meaning occurring in the human brain, (2) new technology is ideal for manipulating form and meaning, and (3) learning is a neurological growth process rather than a behavior, we may begin to see how the new media can be used to improve foreign language teaching in a new and unique way. Possible uses of the unique characteristics of the new technology include use of narrative and descriptive discourse as the primary form of subject matter, and using individual responses to new and interesting materials as a guide to manipulating the interaction of form and meaning with technology. (MSE)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED284418

The "Rear View Mirror" Approach

James R. Nord

FL 016 671

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

J. Nord

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

名古屋商科大学論集
第31巻　第2号
昭和62年3月発行　抜刷

BEST COPY AVAILABLE

The "Rear View Mirror" Approach

by
Dr. James R. Nord

Introduction

Foreign language teaching has an opportunity to make a giant leap forward by the more extensive use of new educational media, particularly by using the new interactive video disk systems sometimes known as AVC (Audio, Visual, Computer) systems. With audio supplimention these systems can truly foster revolutionary new ideas and methodologies within the foreign language teaching field. Unfortunately, most of the present experimentation and usage seems to indicate that the profession is still very conservative and is following an approach labelled by McLuhan as the "rear view mirror" approach[1]. The interactive video disk is being used primarily, it would seem, to do better, what the teachers in the classroom have been trying to do, "get people to talk". It would appear that the general professional focus on "communicative competence" is also the focus of the developers of the new interactive video disk systems. Is this really the best use of the new media?

McLuhan pointed out that most new media innovations follow a rear view mirror approach. They use the past to guide the future. In the beginning they use the former media, as the content for the new media. He pointed out for example, that the first movies tended to use old stage productions

1. Marshall McLuhan, *Understanding Media: the extensions of man*, New York: Signet Books, 1964

as their first content. The first TV used the old movies as their first content. In educational television, the first content was the talking face of a teacher, or at best a teacher lecturing in a classroom setting with a few extra visual props. Likewise, the first CAI programs follow the old teacher tutorial methodology. Now, in the foreign language teaching field the new interactive video seems to be incorporating primarily the current foreign language classroom content: conversations, or communicative situations, i. e. people talking to each other. In some programs, the AVC system replaces the teacher and acts as one half of a conversation with the student.

Indeed, if one follows the foreign language teaching field, one can observe this rear view mirror approach being continually followed. The present emphasis on communicative competence follows the dialogue style used in the audio-lingual approach which got it from the direct method people who were forced into it as the only means they knew of to shift from the written to the oral language forms.

Is this rear view mirror approach inevitable, or can it be short cut? This paper will attempt to suggest ways in which the profession can gain maximum benefits from the new media sooner, by cutting short the rear view mirror approach and helping people turn around to face the future more directly. This will be done by first pointing out some relevant characteristics of media in general, and then applying these to the new AVC media. Second some of the characteristics of the subject matter "language" which relate to the new media will be examined. Finally, the learning process will also be examined in terms of the new media.

In order to short cut this rear view mirror approach, in order to use the new educational media in a manner more in keeping with its inherent potential, it will be suggested that we look at any new educational technology as an informational medium, that we look at language as an

informational process taking place in the brain, and that we recognize language learning an an informational growth process which takes place in the brain[2].

This paper will try to demonstrate that if we look first at the basic characteristics of the media, if we examine the subject matter: language more thoroughly, and if we reexamine our understanding of the learning processes, we will discover a more appropriate use of the new media sooner, than if we simply look back over what we have been doing and try to "automate" it. It will indicate for example that while communicative competence may remain as a worthwhile "goal" for the profession as a whole, it does not appear to be a very valuable "means" to be employed on the new educational technologies. The paper will point out that the use of narrative and descriptive discourse usually in the form of an interesting visual story can be a much more appropriate use of the media than conversation. If we are to short cut the rear view mirror approach and face the future squarely, I believe we need to understand the media better, understand language better and understand the learning process better.

Understanding Media

To understand media better, one should recognize that most media begin as simply extensions of man, or better, extensions of human functions. These media then go through basically three stages of development: a fixative stage, a reproductive stage and a manipulative stage. During the first two stages, the media can be seen primarily as basic extensions of Man, but in the third stage, when the truly unique qualities of the media

2. James R. Nord, "Language as an Interactive Process" *Nagoya University of Commerce Bulletin* Vol.31, No.1. Sept. 1986. pp.275-316.

itself are recognized, these are exploited and the media becomes a higher level system above and beyond its original purpose as an extension of a human function. For example, one can consider the human skin as a surface system or a system performing a boundary function. Clothes can then be viewed as simply an extension of the skin. At first, new clothes were made to act as a second skin, to hold in the heat or to prevent scratches etc. At first they were basically fixative, in that they are made to remain in place for a period of time. Later, Man learned to duplicate them, mass produce them and distribute them to larger numbers of people in different places. Finally, fashion designers created an infinite variety of clothes and clothing by learning how to manipulate certain variables, certain unique characteristics of the media itself. Houses are also extensions of the skin, which have also gone through the same stages. All media seems to go through the same three developmental stages.

Most of our communication media have generally begun as extensions of our sensors. As such they have extended our "informational" rather than our "physical" functions. For example, the telescope was an extension of the eye or sight function. The microscope was also of this same nature. At first, most communication media seem to fixate the information. They often act like external memories. This makes the information involved more permanent (or permanently available) in time. This gives the media its first inherent value, the reason it continues to exist and grow. Mediated information can be reliably repeated. Movies, for example, had an inherent advantage over stage production by fixating it in time, and thus allowing it to be repeated over and over again, with very little additional costs. Once the stage productions were capable of being fixated through the medium of movies, they were also capable of being reproduced and distributed over a geographical area, although at a somewhat higher cost. These two

advantages were sufficient to make movies into money makers, using just the old stage productions. That is, the original movie makers simply set up a camera in the theater, and "fixated" the show, then by duplicating the film, "distributed" it around the country and made money.

Movies used stage shows at first, because their fixative and distribution advantage was sufficient to make them money makers. But slowly, some of the better movies producers and directors, began to see the unique "manipulative" potential in their new media. For example, movie makers began to realize that one could move the camera and come closer to the scene, or farther from the scene. One could take one scene today and another the next day. One could manipulate the scene in movies much easier than one could in a stage production. Creative people like Charlie Chaplin saw the movies as something more than just an extension of the "outer" eye, he saw it as an extension of his "inner" eye, as an extension of his "manipulative" eye: his imagination.

When a few "bold" and "daring" new directors created these new types of movies, the public quickly saw the advantage, and went to these instead of the old stage production types. Soon more and more directors had to look for more and better ways to "manipulate" the movie. The editing room became a major part of the new movie empires, just as today, special "visual effects" are the latest in the "manipulative" extension of vision utilized by the modern movie industry. But the people who saw these "natural" manipulative extensions, were pioneers, bold and daring in their time. Where are these people in education?

The latest media to hit the educational scene is the interactive video disk. It is being used in foreign language teaching. It is being touted as the latest and the greatest. It is innovative and daring. Or is it? Looking at most of the newest and latest products could make one wonder. This new media

does have advantages in fixating teaching patterns. Indeed, that appears to be the first usage, to establish an interactive teaching learning sequence and fixate this on the computer. The distributive phase is still somewhat slowed because the costs of some of the new equipment plus the cost of reproducing some of the video disks is still fairly high. The "real" advantage, the powerful manipulative potential, has, I believe, been barely recognized. As a consequence, the standard classroom approach, the communicative competence routine, the conversational approach is being fixated and distributed on the new media in a "rear view mirror" approach to media innovation.

Time and a few "bold" and "daring" new producers will eventually demonstrate new approaches, new "manipulative" uses of the new media. But must we simply wait for this to happen? Isn't there something we can do to encourage it? I would like to suggest that Pogo may have been right when he said, "We have met the enemy, and they is us." Language teachers look at the new "interactive" video disk systems, and they almost immediately think of how they can use it to get students to "interact" linguistically with it, i.e. as a conversational interaction. Most teacher want to use the media to do what they have been doing in class, trying to get the students to use the language to communicate. I would like to suggest that the first thing we need to do in order to use the new media more effectively and efficiently, is to relook at what we mean by communications and what we mean by "language".

Understanding Language and Communications

At first, many people look at "language" as an extension of thought, as a medium to "communicate" their thoughts. While that may be its present

appearance, I would argue that language as a medium probably began as a medium to help "fixate" thoughts. The "labelling" of concepts is a powerful way to "fixate" or "remember" them. Language may well have begun as a private medium in early man, but as it grew into its second stage of development, the reproductive and distributive stage, it began to be used as a communications tool. As such, it has been extremely helpful to modern man. The history of modern man is largely a history of how he was able to extend his collective thoughts through communications. One or two people can not develop a science or a technology, or even work together without communicating what they have thought or discovered. If one man invents something it will be lost unless he can communicate it to another. In order for knowledge to be preserved so that it can contribute to a growing accumulation of knowledge, it must be repeatable, reliably repeatable. Historically, two of man's most important media of communications were words and pictures. These two media differed for many centuries however, in their degree of repeatability. Once a word is adopted by a culture, taught and learned in that culture, it can be spoken or written with many variations of vocal sound or graphic design and still represent the same word or verbal symbol.

On the other hand, a picture painted on a cave wall could fixate an idea, mental image, a graphic thought, so that it could survive over time, but this picture could not be reliably reproduced for most of known history. A picture which is copied by hand is not reliably repeatable; each time it becomes a different picture. The visual graphic is a direct analog of an individual's visual imagery. It tends to be much more concrete, more representational and less arbitrary than words. The transfer of thought through visuals thus became modified by inexact hand reproduction. One individual could fixate his visual impression, but for many years, there was

no media for reproducing and distributing this visual impresssion. Words in the beginning fixated some sensory impressions in our memory, they were then shared with others within the community and were learned in a way which made them reliably reproducible. Later in time, Man developed a syntax system, which freed it from single lexical meanings, and allowed it to become the highly manipulative media of communications we know today as "language". It was not until the development of printing in the fifteenth century that mankind had the means to reliably reproduce visual images. This was the beginning of modern communications technology and we are just today beginning to move into the manipulative stage of visual communications[3].

Modern science and technology gradually took shape as their indispensible pictorial components were cut or engraved or etched on printing surfaces for widespread dissemination. The linear time order in which words must be used, led naturally to a verbal breaking down of real things into their definable qualities which had only conceptual existence. The reliably repeatable pictures which became available only 500 years ago, allowed for the first time the reliable reproduction of the real objects and mental mappings which could now be presented as a unity, as a gestalt. The

3. The invention of the printing press has been given great historical significance largely because of Gutenberg's use of moveable type, and the mass production of the printed word, particularly the Bible. The other great significance of the printing process, the reliable reproduction of pictures, was just recently point out by W. M. Ivins, Jr. in *Prints and Visual Communications*, London: Routledge and Kegan Paul, 1953. It was also discussed in Karl U. Smith and Margaret Foltz Smith *Cybernetic Principles of Learning and Educational Design*, New York:Holt, Rinehart & Winston, Inc. 1966. With the invention of photography, the motion picture, the editing process, and now computer graphics, the manipulative phase of visual communication is coming into its own as a "new" language. Within another 100 years, this second significance of the printing process may become recognized as far more important than the first.

availability and use of reliably repeatable visuals has had enormous effects upon mankind. Without them, science and technology as we know them today could not exist. With them, we have created a world in which communications technology can let people "see" men landing on the moon and "see" the insides of a human body.

The effects of reliably repeatable visuals upon public education in general and foreign language teaching in particular have been far less dramatic. The educational professionals, the professional linguists and language teachers seem to be heavily dependent upon a repeatable verbal coding system for the majority of their communications effort. The occasional and ancillary use of reliably repeatable visuals are usually referred to as "visual aids" as if they were of secondary value. Yet, this paper will argue that it is the verbal aspect which should be considered secondary, and the visual aspect primary, since the verbal is in effect a derivative of the visual. It will be argued that language is an interactive process which takes place only in the head and which reduces the multidimensional visual imagery meaningfulness to a one dimensional digital coding system we have in the past called "language".

Understanding Language as an Interactive Process

In another paper[4], I argued that we need to look at language as an interactive process. What I meant however by that expression was that we look at language, not as an interactive process *between* people, as in a conversation, but as an interactive process *within* people, within their brains. This interactive process is between form and meaning, between

4. Nord, Op. Cit.

signal and concepts, between the publicly available "language signals" and the private meaningful "understandings". I have argued that the interaction "between" people, the so called conversation demonstrates no significant meaning to the viewers. The words have no meaning in themselves, all of the meaning is in the heads of the participants and these are not directly perceivable. I have therefore argued that using conversation as a "teaching" mechanism, is the least effective approach to language learning, especially using an interactive video disk as the teaching medium. I have argued for a new definition of language as an interaction within the brain which would utilize the inherent advantages of the new AVC systems to their maximum right from the beginning.

With the invention of the new AVC systems, we have for the first time in history, a single medium which combines the visuals from which the meanings can be directly derived, the audio sound forms into which these meanings are encoded as "language" and the manipulative capacity of the computer to simulate the manipulative process by which they go back and forth between the multidimensional meaningfulness and the one dimensional coding system. We have therefore, not just another teaching tool, we also have a major research tool. Indeed, I will argue that we now have for the first time, a major new communications tool by which we can re-define language in a way that the centrality of meaningfulness is inherent and explicit.

The view of language as an interaction process within the brain was expressed over 100 years ago, and although it was given a good deal of publicity, it has not been fully accepted by either the general public or the scientific community. The view was expressed as a personal experience. Stories about it vary. But it goes something like this:

Annie Sullivan began to move the handle of the pump up and down.

> Soon a steady stream of water came pouring out of its spout. Now she took Helen's hand and held it under the cool flow. W-A-T-E-R, she spelled into Helen's wet hand. At first, Helen pulled away. But then, suddenly, she stopped. A new light seemed to come to her face. Annie saw the look. W-A-T-E-R, she spelled again quickly. W-A-T-E-R! W-A-T…… Helen began to spell back. And with each movement her face grew brighter. For suddenly she knew! The shapes that the stranger was making with her fingers did have a meaning! Everything had a name. Everything in the whole world had a name! And she could learn them all[5].

The story is about Helen Keller and her first encounter with language. It was sign language not oral language, because Helen was deaf. It was sign language not written language because Helen was blind. Helen Keller's first language was sign language, but it was not a language for her until it interacted with meaning in her brain. Annie Sullivan had been moving her fingers in the form of letters for weeks, but there was no language until the sign in her hand connected through the brain with the water in her hand. It was the interaction of the sign and the meaning within the brain that made language for Helen. This language, this interaction between signs and meanings in the brain opened up a whole new world for Helen Keller. The insight made a hundred years ago, can open up a whole new world of language study and training today, if we take it seriously. With our new AVC systems we can present both the audio signals and the visual meanings to help the student form the interaction of the two within his own brain. But this would mean redefining language as an interactive process which takes place in the brain between the form and the meaning, rather than as simply the form which takes place in interaction between people.

This is often a difficult task however, for most people. Most of us are like

5. From *Helen Keller* by Margaret Davidson. New York: Scholastic Book Services. 1969. p.43.

fish in water, we are so immersed in language that we really do not understand it. We tend to think of language as something "out there", as something which takes place between people, rather than something within themselves. More importantly, if language takes place only in the head, it becomes an "invisible" phenomenon, and thus can not be studied or understood "objectively". Many linguists, in order to be "scientific" have tried to develop linguistic descriptions independent of meaning. William Chafe is one of the few who over the years has advocated a more central role for meaning in linguistic studies[6]. More recently, Halliday has become more and more influential in the language teaching field because he has placed a stronger emphasis on meaning[7]. Nevertheless, for most of us the meaning is almost always seen as an implicit, rather than an explicit part of language. We tend to see language as something "out there" , as talk or conversation, or writing, because it is observably "out there". Teachers especially see language learning as learning to talk, because that is the only evidence most of them can accept as evidence that the student is learning the language.

Yet consider another communication medium, TV. Television is a system. It converts a multidimensional analog picture through a camera and transmits it by means of a one dimensional digital code through the airwaves which then interacts with a TV receiver which then regenerates the one dimensional digital code into a multidimensional visual picture. Language operates the same way. Our senses take in information in the multidimensional analog code which is generally processed in our right hemispheres. This is converted into a one dimensional digital code which

6. William Chafe, *Meaning and the Structure of Language*. Chicago: University of Chicago Press, 1970.

7. M. Halliday and R. Hasan, *Cohesion in English*. London: Longman, 1976.

operates primarily in the left hemisphere and is transmitted through the airwaves by manipulation of the voice box. This in turn is received by the ear, which passes it on to the brain which regenerates the multidimensional meaning.

Now when we talk about TV, we seldom if ever consider the one dimensional electromagnetic waves passing through the atmosphere as being "the TV". If there were no receivers around, or if they were not turned on or tuned in, we would not even know these waves existed. If we have a radio on us and if we turn it on, and if we tune in to the proper frequency, we realize that these waves exist. Otherwise we ignore them. We certainly do not call them radio. Radio is the converter. Television is the receiver. Language, I believe should be considered as the tuner, the regenerator inside all of us.

Because scientists have objected to "non-observables", I have proposed a Sens-it Cell theory of language which hypothesizes an atomic sens-it cell as the basic language unit, but I must operationalized this to make it testable. While preliminary examples have been designed to operationalize parts of the theory, it can now be done in a much more elaborate manner, using an AVC system as the medium of communications. The theory is elaborated in other papers, but a brief description of the key points should be sufficient to demonstrate how it might be useful to short cut the "rear view mirror" approach, and begin producing more effective and efficient interactive video programs for foreign language training sooner.The sens-it cell model was originally "invented" in the process of developing a language course in Russian[8]. The name and the conceptual framework of the sens-it cell model were originally derived from the SEN:SIT concept first formulated by I.A. Richards, and then combined with the principle of SELection inherent in a hypothesis testing theory of learning. The combination of a signal with a

meaning, was treated by Richards in the following way, when he expressed his views about language and language teaching some 40 years ago.

> 1. We learn a new sentence or sentence element by seeing how it applies in a situation.
> 2. We teach by so presenting the sentence and the situation together that this is seen.
> 3. In what follows, the abbreviation SEN-SIT will be used for this unit made up of a sentence in the situation which gives it meaning.
> 4. Teaching a language effectively consists of inventing, arranging, presenting, and testing SEN-SITs.[9]

I have taken this SEN-SIT concept, and attempted to expand on it. I first added the concept of SELection or the interactive structural mechanism between the SENtence and the SITuation. Then I modified the expression, SEN:SIT::SEL to Sens-it Cell to reflect thc cybernetic feedback mechanism inherent in all interactive structures. There is not room in this paper to go into details of the sens-it cell model covered in other papers, but one advantage of the model is the use of some of the notation, which I would like to use in this paper and will therefore expand on slightly.

Since I am referring to language as an internal phenomenon, rather than an external one, and Richards was referring primarily to the external aspects of that phenomenon, I have preserved the capitalized SEN-SIT

---

8. Frank Ingram, James Nord & Donald Dragt, "A Program for Listening Comprehension" *Slavic and East European Journal*. Vol. 19 No.1 Spring 1975. pp.1-10. Also, James R. Nord, "Sens-it Cell" *System* Vol.3 No.1 Jan. 1975. pp.15-23 and James R. Nord, "Three Steps Leading to Listening Fluency" in *The Comprehension Approach to Foreign Language Instuction*, edited by Harris Winitz, Rowley, Mass: Newbury House, 1981.

9. "Notes on Principles of Beginning Language Instruction" which was prepared by I.A. Richards for a UNESCO Conference in Paris on June 19, 1947. Found on p.125 in I.A.Richards, *Design for Escape*, New York:Harvest Book, Harcourt, Brace & World, Inc. 1968.

abbreviation system to refer to the external observable phenomenon, but designate the internal phenomenon with small letters. Thus a "conversation" between two people can be described in the following way. One individual begins with a sit:uation (an internal meaningful thought). He goes through a sel:ective process generating a sen:tence, which he then converts through his vocal cord system into a SENtence. This SENtence is carried through the airwaves to the ear of the listener, and he converts this to a private sen:tence (which may or may not be identical with the external SENtence). This sen:tence is run through a sel:ective process and triggers a sit:uation in the mind of the receiver. If we are to speak of communications as being reliable, then what we mean is that the sit:uation in the mind of the receiver is similar to, if not identical to the sit:uation in the mind of the sender.

When language is learned within a local culture in which the SITuations are directly experienced along with the SENtence, then the sen:sits are relatively consistent. This is true for a child learning his own language in his own home. It was much more true for the small local tribal units of hundreds of years ago, when their total culture was similar and unchanging over several generations. In these cases, communication of the SITuation is generally reliable through the culturally accepted SENtences. But today, even amongst native speakers of the language, there is increasing "unreliability" among those of different regions, different generations or different political, social or religious inclinations, especially when the topic is of a more abstract nature such as war, peace, love, capitalism, socialism, trust, etc. Today, the use of the SENtence alone as a communication tool, is often inadequate even for native speakers. Certainly we should not rely upon it as the tool for communicating a new language to non-native speakers who are just trying to learn the language.

The critical point of this analysis, is that from the standpoint of an outside observer such as a new language learner, the only thing that is apparent, that is, observable in the ordinary conversation, in the so called dialogue, is the SENtence. And this has no inherent meaning in itself. Teachers who know the language automatically imply meaning to words, but they do not in effect exist. The words are attached to meanings, or trigger meanings in the brains of people through an interactive sel:ective process. The lack of meaning in words may not appear obvious to native speakers, but it is painfully obvious to those who have not internalized this new sel:ective process, i.e. those who have not yet learned the language. Yet this is the audience, this is the observer in the new interactive video disk systems. These systems are supposed to be designed to teach people the new language. I suggest that the use of "conversations" as the basic content of the new interactive video disk systems, presents only the SENtence explicitly, and leaves the student unsure of the SITuational meaning because it is presented only implicitly. I suggest that a story in which descriptive and narrative discourse are used primarily, would provide a far better base for "language" display and manipulation with the new media because both the form(SENtence) and meaning(SITuation) can be explicitly presented.

With the new interactive video disk, the video can supply a descriptive SENtence in parallel with a visual SITuation so that both sides of the language structure, the form and the meaning, are clearly observable. Descriptive visual SITuations could be presented with descriptive SENtences which could range from the classic, "This is a pen" to the more elaborate, "The girl with the red rose in her long blond hair is sitting on the wooden chair in the far corner of the room." SELective processes could be triggered by a number of devices. A simple first step might involve for

example, presenting either four pictorial SITuations with one auditory SENtence, or one pictorial SITuation with alternative SENtences. A more elaborate or complex SELective mechanism similar perhaps to the process used by a detective in sorting out the clues of a crime, or the process a doctor uses in diagnosing a disease could also be designed and programmed into the new AVC systems. Both receptive and expressive SELective processes can be made highly observable. Narrative discourse can also be handled in a similar manner. The distinction being simply that descriptive discourse deals with static scenes, while narrative discourse deals with temporal actions and dynamic events. In both of these cases, both the SENtences and SITuations can be made observable to the learner observer. The SELective processes can also be made highly explicit. In a conversation, the speakers may use descriptive and narrative discourse, but the reference, the situation being referred to, is in the heads of the speakers, and not normally directly observable to the learner observer. The conversational mode therefore seems to be a great waste of the medium's potential for making meaning more explicit through visualization.

I would like to suggest that if we want to use the new interactive video disk systems more effectively and efficiently to teach foreign language, then we must first carefully redefine language as the development of sens-it cells in the brain. Once we do that, we can begin to see how we can use the inherent new manipulative advantage of the interactive video disk systems more effectively and efficiently. The video part of the disk provides a potential wealth of SITuations to manipulate. The present disk configuration provides some audio SENtence potential, but not the full range of manipulative flexibility that a separate "independent" random access audio device would do. With a separate audio SENtence device and

a random access visual SITuational device plus a computer to provide the manipulative flexibility, language training can become a truly learner centered experience if we are careful about how we define "learning".

Understanding learning

Learning according to behaviorists was tied closely to behavior, to observable responses by the learner. Technically, most learning theorists would acknowledge that these were only "indicators" of learning rather than learning itself, but the popular expression, "learning is a change in behavior" became the standard for teachers who had nothing but behavioral responses to judge learning by. This is why talk became so important to language teachers, they really had little other evidence to go by of whether a student had learned. A behavioral orientation to learning has emphasized "active" learning. Most teachers therefore believe that the student must be "active" in order to learn. Active from the teacher's point of view, is some publicly observable behavior. Listening therefore is often referred to as "passive" in spite of the fact that it is highly active internally. Teachers who implicitly accept the behavioral learning premises therefore tend to get their students to actively talk in their classes.

On the other hand, if we acknowledge that learning takes place only in the brain, and that the learning is a kind of growth, an inFORMing of the brain, through an inSTRUCTional process, rather than a behavioral process, then we can look first at that internal growth process. We can worry about the observable indicators of that growth, the behavioral responses later. This is often psychologically difficult for teachers to do, but it is not difficult for an AVC system to accept. Teachers need student responses more than the students need them. From a cognitive point of view, learning takes place on

the input side, not on the output side. The critical factor is what goes in, not what comes out. Learning, as pointed out by Bandura takes place as we take in information, not as we express it. Observational learning is far more effective and efficient than "learning by doing" or "trial and error" learning, which could also be very hazardous. As Bandura has put it,

> Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modelling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action[10].

If one grasps the significance of observational learning in foreign language instruction, one recognizes that we are fundamentally referring to the development of sens-it cells in the brain. On the surface it may appear to be the development of listening comprehension, even listening fluency, through a presentation which clearly presents a SENtence in a SITuation so that it can be clearly understood, but in effect it is much much more. The more critical aspect is that the SELection interactive relationship is completely clear. The student-computer interaction can then be seen as a means by which the student assures himself, that he did in fact not only understand this particular SENtence correctly but that he had formed the correct sens-it cell with all of the ramification that this implies. This understanding can be further refined through well designed "expressive" SELection processes. Observational learning is based on the premise of internal brain growth based on sensory imput.

If we look at learning as a growth process and if we recognize the three basic stages of growth pointed out by Land[11], then we have a basis for

---

10. Albert Bandura, *Social Learning Theory* Englewood Cliffs, N.J.: Prentice-Hall, 1977. p.22

looking for growth indicators which are observable. The stages of growth postulated by Land are accretive growth, replicative growth and mutual growth. These parallel the three stages of media development, fixative, duplicative and manipulative. In the first stage we have a situation in which the structure such as a cell, grows in size. This parallels in many respects the fixative stage of media, in which the essence of the growth is the formation and growth of a particular structure. In human development, the female cell, the potential cell, is fixated and triggered to initial growth by meeting with a sperm. In language learning this would be the initial fixating of a "word" with a potential cell of meaning. This triggers growth of a sens-it cell structure in memory, an interactive structural mechanism between "word" and meaning. The second stage is the reproduction of this structure in a large number of areas. In the growth of a human cell, the single cell grows to a certain point, and then it replicate itself through the process of mitosis. In language learning this would be the reproduction of the fixated sens-it cells, that is, the ability to recall and reproduce spontaneously the "word" in a large number of different sentences and sentence structures. This spontaneous recall of what was previously fixated in recognition memory only, may be what Bandura refers to as "delayed imitation" as contrasted with "immediate imitation"[12].

The third stage of growth deals with the combination and manipulation of smaller structures into a larger structures. For example, in human growth mitosis continues until it reaches a point where some of the cells are "inside" and others are "outside", then these cells shift their functions and go through a division of labor as part of a larger organ or organism. In language learning this means that individual words become functionally

---

11. George T.L. Land. *Grow or Die*. New York:Random House, 1973

12. Bandura, Op.Cit. pp.27-34.

part of a larger structure, taking their meaning from the larger structure as well as from their original meaning. For example, "this watch is running", "Running is fun" and "this is fun watching" all use similar words but with different contextual meanings. The ability to achieve this level of manipulative competence even within a limited vocabulary might be similar in growth terms to what Pike has referred to as "nucleation"[13]. Belasco also describes this point in which a "meta-system" control is established to help one manipulate the parts of language with ease and accuracy[14]. Bandura refers to this as "abstract modelling"[15].

This analysis shows how language courses which put heavy emphasis on vocabulary building and dialogue memorization, i.e. the fixative and reproductive stages, are part of the "rear view" approach pointed out by McLuhan. With the new AVC media, it should be possible to move into the third stage of manipulation within a relatively limited vocabulary and with a minimum of "memorized structures. If we consider language learning as a continual growth of "meaningful" sens-it cells, then we can help the student move through the simple word/meaning interactions to the structure/meaning interactions, to the complex structure/meaning interactions, all within a relatively limited vocabulary load. He can thus learn the most powerful part of language, the manipulative part early, and build up his vocabulary load latter.

Learning as a growth process in the brain implies that we always build on former structures. We are dealing with informational structures and what

---

13. Kenneth L. Pike "Nucleation." *Modern Language Journal*, XLTV (Nov. (1960), pp. 291-95.

14. Simon Belasco. "Nucleation and the Audio-Lingual Approach." *Modern Language Journal*, XLIX (Dec. 1965), pp.482-91.

15. Bandura, Op.Cit. pp.41-49.

we need is to "feed them", not just exercise them. As parents trying to help our own children grow, we do not just give them anything they want, we try to give them a well balanced meal which is appropriate for their stage of development. We don't give a two month old child, a two pound steak. On the other hand, we also try to make the food we present to them attractive, tasty and enjoyable as well as nutritious, and we have to take into account their own individual likes and dislikes in both choice and amount. With the computer as an interface between SENtence and SITuation as well as between the student and language learning process, we have great potential for feeding the student good information in a sequence which is most nutritious, but it will only happen if also have great imaginations, great dreams and great hopes.

What next?

Details of how this can be done still await some of the more "bold" and "daring" programmers who can break away from the classroom mold and create truly innovative manipulative options. In order to short cut the rear view mirror approach, in order to use the new educational media in a manner more in keeping with their own inherent potential, I have suggested that we don't look back on our old practice, but that we look forward to the future with a new vision. I have suggested that we look at educational technology as an informational media, that we look at language as an interactive sens-it cells in the brain, and that we recognize language learning as a growing of these language sens-it cells in the brain. If we do this, then I believe we will be able to create more effective and efficient foreign language teaching programs using the new AVC systems.

While details are sketchy, a few general instructional principles and

strategies are already emerging which can help stimulate people to move in the right direction. The basic principles expressed by I.A. Richards over 40 years ago, still seem very applicable. They therefore bear reviewing. The basic point is the coordinate presentation of a SENtence with a clarifying SITuation. It is very difficult to do this with "conversational" discourse. It is much easier to combine SENtence and SITuation in descriptive and narrative discourse. Richards also points out that comparisons and contrasts are excellent ways to teach. Using an interactive video disk, students can be allowed to compare and contrast both SITuation and SENtence variables at many levels of abstraction. Because the AVC system has the potential for visualization, a great deal of meaningfulness can be enhanced through the manipulation of the visual component. Words if written on the screen can be color coded for example. SITuations can be focused upon through visual manipulations such as close-ups, pointing, slow motion etc. Temporal control of both the stimulus and the student response time can be used to start where the student is, and move him on to greater and greater fluency. The interactive quality of the computer can insure continued knowledge of correct responses on the part of the student. The potentials are there, we just need to look forward to them, rather than back upon our own past practices.

Summary

The new AVC interactive video disk systems with augmented audio have very great potential for improving the teaching of foreign languages. At present that potential seems as yet unfulfilled, mainly because the profession is continuing to follow what McLuhan has labelled the "rear view mirror" approach to media usage. At first, the media seem to be used

primarily to fixate a practice which is already being done. This is then generally reproduced and distributed broadly. Finally some imaginative and creative people begin to see the "unique" characteristics of the media, and exploit them as part of a totally new system, manipulating these characteristics in new and unusual ways to effect a higher level of communication.

At present the use of the AVC systems seem to be confined to the first two levels. The present classroom emphasis on speaking and conversation are being fixated and distributed on the first AVC programs being produced. As we become more and more aware that language is an interactive process which takes place in the human brain between form and meaning, rather than as a "conversation" between people; and as we become more and more aware that the new AVC systems are ideal for manipulating these two variables; and as we become more and more aware that learning is a growth process in the brain rather than a type of behavior, then we may begin to be able to see how the new media can be used to improve foreign language teaching in a new and unique manner.

Using narrative and descriptive discourse as the primary form of "subject matter" was suggested as one means of utilizing the "unique" characteristics of the AVC media. Presenting the material in as interesting a manner as possible, and then dealing with each individual's responses as a basic guide for manipulating the interaction between form and meaning was also suggested as a means of using the AVC system in a more effective manner. These suggestions however rely upon the primary assumption that language includes meaning as an inherent characteristic, and that the principle value of the AVC systems is that they can, if properly used, make this "meaningfulness" of language clearer than any other medium presently available.